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The Midland Naturalist

PUBLISHED BI-MONTHLY FROM THE BIOLOGICAL
LABORATORIES OF THE UNIVERSITY OF NOTRE DAME

Vol. I.

AUGUST, 1909.

No. 3.†

Ecology of a Certain Orchid.

BY EDWARD L. GREENE.

The plant I have in mind is *Cypripedium acaule*, distinctly a noteworthy member of its family, rather unique even in so showy and beautiful a genus, on account of two large basal leaves from the midst arises its naked stem, almost too slender to support strongly its one large purple odorous flower; and the plant, is withal, something of a rarity. In the vast prairie regions lying to the southward of Lake Michigan there must be a number of botanists of the younger generation, I think, who never saw this *Cypripedium* growing. I myself who, within the last forty years have botanized on foot some thousands of miles on the prairies and in the woodland belts that skirt them in Indiana, Illinois, southern Iowa and southern Minnesota, never yet met with it in these districts.

I can not imagine that even a child, having in him the making of a botanist, would forget in after years the place where he first found this fine plant, the stemless species of Lady's Slipper.*

My own first coming upon this *Cypripedium acaule* happened when I was a botanizing child of seven or eight years. It grew on a wooded and rather dry slope above the Ashway, or, as they now call it, the Ashaway River, very near the village of Ashaway, Rhode Island. It was to me a startling discovery; for, used to ransacking all pastures and bogs, groves, woods and stream banks during several seasons before this, I had supposed I knew already all the native plants of my native township of Hopkinton; and here was

* I write it in that way advisedly; for it is certain that these plants were originally so called not in allusion to slippers of ladies in general. The meaning was Slippers of Our Lady, that is, the Blessed Mother. Away back in mediaeval times the universal Latin name of the Old World type of this genus was *Calceolus Mariae*.

† August 16, 1909.—Pages 61 to 80.

finest of them all, never chanced upon before in all my boyish botanizings. In my simplicity and ignorance I wondered if any one else had seen this curious glorious flower that hid itself away far from any path, in the most obscure shade of the woodland bank. I took it, root and all, to my home a mile away, purposing to make enquiry whether any one else had ever seen the plant and had a name for it. Several of my elders recognized it, and one of them said its name was Adam and Eve. I seem to have had the sense not to commit it to my mother's flower garden, but chose for it a shaded and precipitous bank close by; the sweet birch bushes and Kalmias, with the partridge berry (*Mitchella repens*) forming almost a turf at the place. As I remember with perfect distinctness, my transfer of the plant was to an exceedingly different spot, ecologically considered, from that in which I had found it; for there I had observed no kalmia, no betula, no mitchella, but only oak and hickory trees and hazel bushes, everything deciduous; the soil light and loose, of leaf mould; whereas in the proposed new habitat, the ground was clayey, also a little sandy. My transferred specimen did not reappear at all next season. Its new environment seems to have been fatal to it. Nevertheless, allowed to choose for itself, I know of no orchid, and of few other woodland plants, any one of which adapts itself to greater diversities of climate, soil and ecologic consociation.

My second meeting with this same orchid was at a station about one thousand miles westward from Rhode Island, where the climate is much more severe, where also both the nature of the soil in which it grew, and the plant association, were about as different as imaginable considering that the parallel of latitude is approximately the same. This, my second locality, was in the midst of a larch swamp in southern Wisconsin. Here *Cypripedium acaule* would have to be classed as a bog plant; for a larch swamp in Wisconsin is a very wet place; usually almost wholly sphagnum. In some parts of it the only way of getting about without wading, or else sinking deeply into the watery-spongy masses of sphagnum was to step from one to another of the large superficial and horizontally spreading roots of the larches. Under the coarse network of these roots seemed to be nothing but water.

The sphagnum border encircling the central forests of tamaracks, or larches, yielded plentifully such interesting boreal shrubs as were then known by the names of *Cassandra calyculata*, *Andro-*

meda Polifolia, *Kalmia glauca* and *Pyrus arbutifolia*; then in patches of the more open sphagnum among these bushes grew such fascinating beauties as *Pogonia ophioglossoides*, *Calopogon pulchellus* and *Arethusa bulbosa*; while around and among them all were cranberry vines, and the little mats of several kinds of sundew. Not exactly among these sphagnophiles, but rather just under the shade of such larches as occupied ground a trifle more elevated, and where from the leaves of them and the viburnums and mountain ash bushes a slight depth of leaf mould had accumulated, one always found this fine cyripedium, also here and there along with it *Linnaea borealis*.

Now, as I have already said, the associations of this plant there in Wisconsin were in very marked contrast to those chosen by it in that part of New England where I had known it. And what may add still more to the interest of it in its tamarack marsh locality of the West, is this, that here, on wooded slopes like those where at the East one would have looked for this species, one met always with another cyripedium and not this. The southern boundary of the one Wisconsin marsh where I found *Cypripedium acaule* most plentiful was just such a rich shady hillside, sloping northward, of course; and this was the best station I knew of for *Cypripedium spectabile*; but no other grew there.

From the time of my observing *Cypripedium acaule* in the larch swamps of Wisconsin more than thirty consecutive years elapsed without my having once seen a living specimen of this fine orchid; years of sojourn and of travel in regions far beyond the range of it. I then came suddenly one spring day upon a large colony of it in a piece of low damp woods near the banks of the lower Potomac River in Maryland. I was fairly enthralled by the vision of so great a number of these beautiful things all in one place. I had been used to think it a piece of very good botanical fortune if ever I found three or four of them within a few feet of each other; and here there were some dozens of them to be seen at one view, and a considerable tract of this forest shade was in a manner covered with them; not, of course, that the plants were at all crowded together; they were scattered about, as usual, but the area occupied with them measured several rods, and there was such an almost total absence of larger undergrowth of shrubs and herbaceous plants as rendered many of the cyripediums visible at one glance.

During long years of ardent botanical field study I have been so well used to contemplate ecological conditions, that here,

almost from the first moment my delight in the absolute beauty of this scene, and the unexpected renewal of acquaintance with one of my childhood favorites, were mixed with a feeling of wonder at what to me seemed a new and strange kind of environment for this orchid. Naturally my ideal of a habitat for *Cypripedium acaule* was that of the frigid swamps of the far Northwest where hitherto my best acquaintance with the species had been made; a sphagnous swamp where mosses took the place of soil, and all the shade was that of a certain conifer. There, during nearly four months of every year the cypripedium roots were imbedded in ice; not in frozen earth, but practically in ice itself. Here in this low woodland of the mild South I doubt if ever in the middle of winter the ground freezes to the depth of an inch. The trees that make the shade are every one deciduous. They are nyssas, sweet gum, red maple, and hydrophilous oaks and ashes. No ericaceous undershrubs are near; there is no sphagnum, no moss or lichen, only a lycopodium or two; not a plant of arethusa or pogonia, though now and then one sees a little green-flowered achroanthes and an aplectnum, but no other orchids at all; and the leaf mould in which the plants flourish is more moist a great deal than that of the plants hillside habitat in New England. Indeed, not many rods away from where this fine colony grows the depression of the land falls to that of an open shallow pond that is occupied by no trees at all, but by boggy rhynchosporas and other sedges, and by sagittarias, saururus and peltandras, besides the lance-leaved subaquatic *Ranunculus obtusiusculus*. I have no other equally strong contrast ecologic in mind as that subsisting between the Wisconsin habitat for *Cypripedinm acaule* and this of the lower Potomac in Maryland. It is one of the ecologic marvels of my own rather wide experience in North American botany.

Once again, and within a few years, also in a locality of the Potomac water shed, I met with this particular lady's slipper, and this time high up on the northward slope of the Blue Ridge. The elevation was little less than a thousand feet. The ground was not in the least degree marshy. It was a yellow bank of sandy-clayey formation. The associated plants were mainly low azaleas, vacciniums antennarias and hawkweeds; yet another and very striking contrast.

I have been informed by that excellent Canadian botanist, Mr. James M. Macoun, that not far from Ottawa *Cypripedium acaule*,

while most common in low ground bordering swamps, has for an alternative situation upland rocky woods in the shade of sugar maples.

It is a part of the common experience of field botanists that most plants of any rarity, or special interest are always to be sought each in some preferred soil and other points of environment, and there associated with almost always about the same list of concomitant species belonging to other alliances. Striking exceptions to this general rule may perhaps not be found so rare as we have been accustomed to think, especially when marked species like this which have a wide distribution, shall have been studied ecologically throughout the whole of their extensive range. But I doubt if any other North American plant will be found to occur under such extreme diversity of conditions as this one does, and that, as I suppose *Cypripedium acaule* does, without evincing any considerable diversity morphologically.

One botanical friend, much given to ecologic research, expressed a feeling of surprise at my account of this cypripedium, and wondered if the seeds, for example, of the high-northern bog plant would so much as germinate in the low sultry Potomac valley habitat.

The Name *Stemonitis* a Synonyme.

J. A. NIEUWLAND.

Taking as the fundamental rule for the nomenclature of plants that no names be accepted that antedate May, 2, of the year 1753, when the *Species Plantarum* of Linnaeus was edited, it must be shown that the name *Stemonitis* Gleditsch, 1753, was published later than the above date of Linnaeus' work, or the name as attributed to that author will not hold, assuming that date as the starting point for names of slime moulds. In some of the common texts* the genus is written *Stemonitis*, (Gleditsch) Rostafinski, 1873. The oldest name for the group of plants at present comprised under the genus is that of Micheli, † *Clathroideastrum*, given

* MacBride, T. *North American Slime-Moulds* (1899.)

Cooke, M. C. *Myxomycetes of Great Britain*. (1877.)

† Adanson, M. *Familles des Plantes*, (1763) Vol. 11, p. 7.